What we claim is

1. Method for automatically correcting colour defective areas in an image, said defective colour areas being recorded with a colour spectrum deviating from the actual colour spectrum of said areas without colour defects, in particular automatic red eye correction, wherein:
   a) basic areas in the image are identified on the basis of features which are common for these recorded defective areas, e.g. skin detection to identify skin related areas, face detection on the basis of a face pictogram or the like and/or an eye detection, and so on, said basic areas supporting an increased likelihood of including defective areas, in particular red eye defects;
   b) the processing is reduced to the basic areas to identify borderlines and/or centers of the defective areas, in particular red eye defects;
   c) it is identified whether the localised area or areas, deemed to be defective, is/are defective or not, in particular whether a detected eye has a red eye defect or not;
   d) if a localised area, e.g. an eye, has been identified to be defective, a correction mask is created to correct the visual appearance of the defective area.

2. Method according to claim 1, characterized in that, alternatively to the feature 1a), a specialised portrait mode can be activated in the case of defective red eye detection.

3. Method according to claim 1, wherein if, after one of the steps 1a) to 1c), the processing of an image has not resulted in the identification of an area to be processed further, the processing of an image is stopped and another image can be processed.

4. Method according to claim 1, wherein after a center of a basic area, e.g. an eye, has been identified, an expected defect is emphasised in its intensity (I, I_{red}), to more easily detect whether the basic area is defective, wherein in the case of a detected colour defect, in particular a defective red eye, the following Equation is particularly useful:

$$I_{red} = R\text{-}\min(G,B) \qquad \text{(Eq. 1.1)},$$

where R refers to a red colour channel, G refers to a green colour channel and B refers to a blue colour channel.

5. Method according to claim 1, wherein the basic area or basic areas are treated by an edge detection processing to achieve borderlines of the basic areas.

6. Method according to claim 1, wherein in a case that a red eye defect is to be corrected and the position and size of the iris have been estimated, the maximum of the red eye defect is determined to be the actual position of the iris of an eye.

7. Method according to claim 6, wherein neighbouring pixels are analysed with respect to the actual position or center of the iris considering several curves of the HSV colour space, which curves were achieved by analysing a variety of real-world photographs with red eye defects to acquire fuzzy membership functions of three colour channels to be taken into account, and determining intersections between at least three colour channel positions of each of the neighbouring pixels and said fuzzy membership functions, e.g. on the basis of the following Equation:

$$r = \frac{hsv}{\max(h,s,v)} \qquad \text{(Eq. 1.2)},$$

and deciding on the basis of the intersection values that a particular neighbouring pixel is defective if its intersection values exceed a predetermined threshold, wherein a correction mask is created, if these steps are repeated for all relevant pixels.

8. Method according to claim 7, wherein a first arrangement around the equal position or center of the iris forms a first layer of first neighbouring pixels, and if the first layer of first neighbouring pixels is at least partially identified as belonging to the red-eye defective pixels, other second neighbouring pixels with respect to the first neighbouring pixels are analysed along a same line as the first neighbouring pixels to be identified as red-eye defective pixels or not, and if further red-eye defective pixels have been identified, considering further other neighbouring pixels, and so on, wherein the correction mask is caused to grow.

9. Method according to claim 8, wherein the analysis of, and extension to, neighbouring pixels is terminated if no further other neighbouring pixels have been identified as red-eye defective and/or if the borderlines of the defective red eye have been reached or exceeded.

10. Method according to claim 8, wherein the pixel data representing the correction mask are directed to at least one smoothing operation.

11. Method according to claim 8, wherein the correction mask, preferably a grey-scale correction mask, is applied to the matching area of the uncorrected image to remove the colour defect, and in particular the red-eye defect.

12. Method according to claim 11, wherein the removal of the colour defect, and in particular the red-eye defect, is practised by means of the following Equation:

$$I_{red\ new} = R\text{-}m(R\text{-}\min(G, B)) \qquad \text{(Eq. 1.3)},$$

where m is an element of the correction mask corresponding to a particular pixel of the uncorrected image.

13. Method according to claim 11, wherein, if a particular pixel of the uncorrected image has a considerably large difference between the green channel and the blue channel, the larger channel is adjusted in accordance with Equation (1.3).

14. Image processing device for processing image data, including:
    a) an image data input section,
    b) an image data processing section,
    c) an image data recording section for recording processed image data,
    d) wherein the image data processing section implements a method according to claim 1.